

CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A manufacturing method for manufacturing an electro-optical device having an electro-optical panel with a substrate holding an electro-optical material and a mount base member bonded to the substrate, the manufacturing method comprising:

a first step of aligning the substrate with the mount base member so that a plurality of first alignment marks, which are formed on the surface of the substrate and arranged to be opposed to each other with a first terminal bank interposed therebetween, are superimposed aligned with~~ever~~ a plurality of second alignment marks, which are formed on the surface of the mount base member and arranged to be opposed to each other with a second terminal bank interposed therebetween, the first terminal bank being formed on the surface of the substrate, the second terminal bank being formed on the surface of the mount base member at a pitch which is smaller than a pitch of the first terminal bank, the plurality of second alignment marks being arranged at a spacing approximately equal to a spacing of the plurality of first alignment marks, and at least one of the plurality of first alignment marks and the plurality of second alignment marks being formed on the corresponding one of the substrate and the mount base member in the same step that the corresponding one of the first terminal bank and the second terminal bank is produced; and

a second step of connecting the first terminal bank to the second terminal bank with thermal compression bonding, the mount base member having a linear thermal expansion coefficient that is larger than a linear thermal expansion coefficient of the substrate;

wherein the connection step directly connects the first terminal bank and the second terminal bank, both of which become substantially equal to each other in pitch when the substrate and the mount base member are deformed during the thermal compression bonding of the substrate and the mount base member, and wherein during the connection step, the plurality of second alignment marks become spaced mutually more apart than the spacing of the first alignment marks.

2. (Cancelled)

3. (Original) The manufacturing method for manufacturing an electro-optical device according to Claim 1, wherein, in the connection step, the substrate and the mount base member are bonded together with an adhesive layer interposed between the substrate and the mount base member by heating the adhesive layer.

4. (Cancelled)

5. (Original) The manufacturing method for manufacturing an electro-optical device according to Claim 4, wherein the mount base member is a member having a thickness within a range from 50 μm to 125 μm and a linear thermal expansion coefficient falling within a range from $2.5 \times 10^{-5} / \text{K}$ to a $2.6 \times 10^{-5} / \text{K}$ under a measurement temperature range from 100°C to 200°C, and

wherein the pitch of the second terminal bank is 0.996 times to 0.997 times the pitch of the first terminal bank.

6. (Original) The manufacturing method for manufacturing an electro-optical device according to Claim 4, wherein the mount base member is a member having a thickness within a range from 5 μm to 75 μm and a linear thermal expansion coefficient falling within a range from $0.8 \times 10^{-5}/\text{K}$ to $1.0 \times 10^{-5}/\text{K}$ under a measurement temperature range from 20°C to 100°C, and

wherein the pitch of the second terminal bank is approximately 0.998 times the pitch of the first terminal bank.

7. (Original) The manufacturing method for manufacturing an electro-optical device according to Claim 1, wherein the substrate contains a material selected from the group consisting of glass and silicon, and the mount base member contains a material selected from the group consisting of polyimide and polyester.

8. (Original) The manufacturing method for manufacturing an electro-optical device according to Claim 1, wherein the substrate contains glass, and the mount base member contains polyimide.

9. (Currently Amended) A terminal connection method for connecting a first terminal bank formed on the surface of a first base member to a second terminal bank formed on the surface of a second base member, the connection method comprising the steps of:

fabricating the second terminal bank at a pitch that is smaller than a pitch of the first terminal bank, the second base member having a linear thermal expansion coefficient that is larger than a linear thermal expansion coefficient of the first base member;

aligning the first base member with the second base member so that a plurality of first alignment marks, which are formed on the surface of the first base member and arranged to be opposed to each other with the first terminal bank interposed therebetween, are superimposed aligned with ~~ever~~ a plurality of second alignment marks, which are formed on the surface of the second base member and arranged to be opposed to each other with the second terminal bank interposed therebetween, the plurality of second alignment marks being arranged at a spacing approximately equal to a spacing of the plurality of first alignment marks, and at least one of the plurality of first alignment marks and the plurality of second alignment marks being formed on the corresponding one of the substrate and the mount base member in the same step that the corresponding one of the first terminal bank and the second terminal bank is produced;

directly connecting the first terminal bank and the second terminal bank;

thermal compression bonding the first base member to the second base member; and

during the thermal compression bonding step, deforming the first base member and the second base member such that the first terminal bank and the second terminal bank become substantially equal in pitch and the plurality of second alignment marks become spaced mutually more apart than the spacing of the first alignment marks.

10. (Original) The terminal connection method according to Claim 9, wherein, in the bonding of the first base member to the second base member, the first base member and the second base member are bonded together with an adhesive layer interposed between the first base member and the second base member by heating the adhesive layer.

11. (Original) The terminal connection method according to Claim 10, wherein the linear thermal expansion coefficient of the second base member is larger than the linear thermal expansion coefficient of the first base member, and
wherein the pitch of the second terminal bank is smaller than the pitch of the first terminal bank prior to the bonding step.

12. (Currently Amended) A manufacturing method for manufacturing a mount base member having a second terminal bank to be connected to a first terminal bank formed on a base member and being thermal-compression bonded to the base member, the manufacturing method comprising:

~~the step of~~ forming the second terminal bank in such a manner that the pitch of the second terminal bank is a/b times the pitch of the first terminal bank; and

aligning a plurality of first alignment marks formed on said base member with a plurality of second alignment marks formed on said mount base member, at least one of the plurality of first alignment marks and the plurality of second alignment marks being formed on the corresponding one of the base member and the mount base member in the same step that the corresponding one of the first terminal bank and the second terminal bank is produced;

wherein subsequent to the thermal compression bonding of the mount base member to the base member, the first terminal bank expands in width in the transverse direction thereof on the base member by a times and the second terminal bank expands in width in the transverse direction thereof on the mount base member by b times; and

[[a]] said plurality of second alignment marks formed on said mount base member are spaced mutually more apart than [[a]] said plurality of first alignment marks formed on said base member.

13. (Original) The manufacturing method for manufacturing a mount base member according to Claim 12, wherein the coefficients a and b defining the pitch of the second terminal bank are values determined by a linear thermal expansion coefficient and thermal compression bonding conditions of the mount base member.

14. (Currently Amended) An electro-optical device comprising:

an electro-optical panel including a substrate holding an electro-optical material;

a mount base member thermal-bonded to the substrate, said mount base member having a linear thermal expansion coefficient that is larger than a linear thermal expansion coefficient of the substrate;

~~a first terminal bank formed on the surface of the substrate; and~~ a plurality of mutually spaced apart first alignment marks simultaneously formed ~~and mutually spaced apart~~ on the surface of the substrate; and

~~a second terminal bank formed on the mount base member and a plurality of second alignment marks simultaneously formed on a surface of the mount base member,~~

wherein the second terminal bank is directly connected to the first terminal bank, a pitch of the second terminal bank ~~being~~ is substantially equal to a pitch of the first terminal bank, and the second alignment marks are spaced mutually more apart than a spacing of the first alignment marks; and

~~a plurality of second alignment marks formed on the surface of the mount base member, and spaced mutually more apart than the spacing of the first alignment marks,~~

~~wherein~~ one group of the plurality of first alignment marks and another group of the plurality of first alignment marks are arranged to be opposed to each other with the first terminal bank interposed therebetween[,]; and

~~wherein~~ one group of the plurality of second alignment marks and another group of the plurality of second alignment marks are arranged to be opposed to each other with the second terminal bank interposed therebetween.

15. (Cancelled)

16. (Original) The electro-optical device according to Claim 14, wherein the substrate and the mount base member are bonded to each other with an adhesive layer therebetween, and wherein the adhesive layer contains conductive particles dispersed therewithin to conductively connect the first terminal bank to the second terminal bank.

17. (Original) The electro-optical device according to Claim 14, wherein the mount base member is a film-like member having flexibility.

18. (Original) The electro-optical device according to Claim 14, wherein the substrate contains a material selected from the group consisting of glass and silicon, and the mount base member contains a material selected from the group consisting of polyimide and polyester.

19. (Original) The electro-optical device according to Claim 14, wherein the substrate contains glass, and the mount base member contains polyimide.

20. (Original) The electro-optical device according to Claim 14, wherein the mount base member is a member having a thickness within a range from 50 µm to 125 µm and a linear thermal expansion coefficient falling within a range from $2.5 \times 10^{-5}/K$ to $2.6 \times 10^{-5}/K$ under a measurement temperature range from 100°C to 200°C, and

wherein the spacing of the second alignment marks is 1.003 times to 1.004 times the spacing of the first alignment marks.

21. (Original) The electro-optical device according to Claim 14, wherein the mount base member is a member having a thickness within a range from 5 μm to 75 μm and a linear thermal expansion coefficient falling within a range from $0.8 \times 10^{-5}/\text{K}$ to 1.0×10^{-5} under a measurement temperature range from 20°C to 100°C, and

wherein the spacing of the second alignment marks is approximately 1.002 times the spacing of the first alignment marks.

22. (Original) Electronic equipment comprising an electro-optical device according to Claim 14.

23. (Currently Amended) A mount base member to be bonded to a substrate of an electro-optical panel, comprising:

a second terminal bank and a plurality of second alignment marks simultaneously formed with the second terminal bank; and formed at a pitch that is smaller than a pitch of a first terminal bank formed on the substrate, the second terminal bank being directly connectable to the first terminal bank;

a linear thermal expansion coefficient that is larger than a linear thermal expansion coefficient of the substrate; and

wherein the second terminal bank is directly connectable to a first terminal bank formed on the substrate and includes a pitch that is smaller than a pitch of the first terminal bank, [[a]] the plurality of second alignment marks are arranged to be opposed to each other with the second terminal bank interposed therebetween, the plurality of second alignment marks being and arranged at a spacing approximately equal to a spacing of a plurality of first alignment marks formed on the substrate, and the plurality of first alignment marks being are arranged to be opposed to each other with the first terminal bank interposed therebetween; and

wherein after the mount member is aligned with the substrate by aligning the second alignment marks with the first alignment marks and connected to the substrate with thermal compression bonding, the plurality of second alignment marks are spaced mutually more apart than the spacing of the first alignment marks.

24. (Currently Amended) A mount base member to be thermal compression bonded to a substrate of an electro-optical panel, the mount base member comprising:

a second terminal bank and a plurality of second alignment marks simultaneously formed with the second terminal bank, the second terminal bank to be connected to a first terminal bank formed on the substrate; ~~wherein the and including a pitch of the second terminal bank that is,~~ prior to the thermal compression bonding, ~~is a/b times the a pitch of the first terminal bank;~~ and

wherein subsequent to the thermal compression bonding of the mount base member to the substrate, the first terminal bank expands in width in the transverse direction thereof on the substrate by a times and the second terminal bank expands in width in the transverse direction thereof on the mount base member by b times; and

[[a]] the plurality of second alignment marks formed on said mount base member are spaced mutually more apart than a plurality of first alignment marks formed on said substrate.

25. (Currently Amended) A mount base member to be thermal compression bonded to a substrate of an electro-optical panel, the mount base member comprising:

a second terminal bank and a plurality of second alignment marks simultaneously formed with the second terminal bank, the second terminal bank to be connected to a first terminal bank formed on the substrate; ~~wherein the and including a pitch of the second terminal bank that is,~~ prior to the thermal compression bonding, ~~is 1/b times the~~ a pitch of the first terminal bank; and

wherein subsequent to the thermal compression bonding of the mount base member to the substrate, the second terminal bank expands in width in the transverse direction thereof on the mount base member by b times; and

[[a]] the plurality of second alignment marks formed on said mount base member are spaced mutually more apart than a plurality of first alignment marks formed on said substrate.